WHAT IS CLAIMED IS:

1. An encryption apparatus for performing an encryption operation using a public key encryption technique, said encryption apparatus comprising:

public key encryption processing means for performing an encryption operation using a public key encryption technique;

hash value generation means for generating a hash value which is used by the public key encryption processing means; and

storage means for storing the hash value,

wherein when the hash value generation means accesses the storage means, at least other arithmetic operations performed by the public key encryption processing means are suppressed.

2. An encryption apparatus according to claim 1, wherein the public key encryption processing means includes a register group having a register for maintaining an arithmetic operation value and a register for storing a result,

the hash value generation means includes a register group having a register for maintaining an arithmetic operation value and a register for storing the generated

hash value,

at least the register group of the public key encryption processing means and the register group of the hash value generation means are shared, and

the hardware is switched in a time-shared manner depending upon the operation mode.

3. An encryption apparatus according to claim 1, further comprising common key encryption processing means for performing an encryption operation using a common key encryption technique to generate a random number for use in the encryption operation of the public key encryption processing means, the common key encryption processing means including a register group having a register for maintaining the resulting data and a register for maintaining key data,

wherein the register group of the common key encryption processing means and the register group of the public key encryption processing means are shared.

4. An encryption apparatus according to claim 3, wherein the common key encryption processing means performs the encryption operation using the DES technique.

5. An encryption apparatus according to claim 1, wherein the public key encryption processing means includes

public key encryption arithmetic operation core means for performing various arithmetic operations for public key encryption,

the hash value generation means includes hash value arithmetic operation core means for performing various arithmetic operations for hash value generation, and

the public key encryption arithmetic operation core means and the hash value arithmetic operation core means are shared.

6. An encryption apparatus according to claim 5, wherein the public key encryption arithmetic operation core includes adder means, and shares the adder means with the hash value arithmetic operation core means.

7. An encryption apparatus according to claim 1, wherein the public key encryption processing means includes a bus switch for making the bit width variable, and

the public key encryption processing means shares the bus switch with the hash value generation means.

8. An encryption apparatus according to claim 7, further comprising common key encryption processing means for performing an encryption operation using a common key encryption technique to generate a random number for use in

the encryption operation of the public key encryption processing means, the common key encryption processing means including a bus switch,

wherein the bus switch of the common key encryption processing means and the bus switch of the public key encryption processing means are shared.

9. An encryption apparatus according to claim 1, wherein the hash value generation means stores the generated hash value into the storage means at an address which is used by the public key encryption processing means, and

the public key encryption processing means reads the hash value stored in the storage means.

10. An encryption apparatus according to claim 1, wherein the public key encryption processing means performs the encryption operation using the elliptic curve cryptosystem technique.

11. An encryption apparatus according to claim 1, wherein the hash value generation means performs an operation using the SHA-1 technique.

12. An encryption apparatus according to claim 1, wherein the encryption apparatus is incorporated in a non-

contact IC card having a communication function.